

The Characteristics of Bladder Stones in Adult Patients at Haji Adam Malik General Hospital from 2013 to 2015

Mudatsir^{1*}, Ramlan Nasution¹, Syah Mirsyah Warli¹

¹Division of Urology, Surgery Department, School of Medicine Universitas Sumatera Utara/ Haji Adam Malik General Hospital, Medan, Indonesia

Abstract : Introduction. The purpose of this study is to know the characteristics of bladder stones in adult patients at H. Adam Malik General Hospital Medan from year 2013-2015. **Methods.** This study used a retrospective descriptive method conducted in the Department of Surgery, Division of Urology, H. Adam Malik General Hospital Medan from January 1, 2013 to December 31, 2015. Data taken from medical records of inpatients and outpatients \geq 18 years with a diagnosis of bladder stones. **Results.** Characteristics of adult bladder patient in RSUP H. Adam Malik Medan year 2013-2015 according to male gender 44 people (84.6%) and woman 8 people (15.4%), according to age most age range 61-65 years old, ie 8 people (15.4%), according to the type of work most of them are self-employed 24 people (46.1%), according to the most recent high school education 31 people (59.6%), according to religion most is Islam 29 people (55.8%), according to the majority area came from Medan City 15 people (28.8%), according to most clinical symptom is dysuria symptoms 35 people (67.3%) followed by hematuria 28 people (53.8%), 1 stones are 46 people (88.5%), according to stone size most stone size \leq 25 mm (61.5%), while stone size $>$ 25 mm there are 20 people (38.5%), according to comorbid most of BPH 18 persons (34.6%), without comorbid 6 people (19.2%), according to the type of action most lithotripsy 27 people (51.9%), while vesicolithotomy 20 people (38.5%). **Conclusion.** Characteristics of bladder stone in adult patient at H. Adam Malik General Hospital Medan year 2013-2015 which is mostly by male gender 84.6%, age range 61-65 years old 15.4%, type of job entrepreneur 46.1%, last education High school 59.6%, Islamic religion 55.8%, area of Medan city 28.8%, clinical dysuria 67.3%, number of stones 1 for 88.5%, stone size \leq 25 mm 61.5%, comorbid BPH 34.6%, and type of lithotripsy action 51.9% .

Keywords : Characteristics, bladder stones, H. Adam Malik General Hospital Medan.

Introduction

Bladder stones is the third most problem in the urinary tract after infection and pathologic prostate. In developing countries, the incidence of bladder stones increases about 0.2% every year. The impact of weather change referred to geographic aspect, the risk of bladder stones would increase by change. The incidence of bladder stone occurrence in Asia is approximately 2-5%, 8-15% in Western countries, and 20% in Saudi Arabia.² Bladder stones are often found undeliberately in patients with obstructive and irritative symptoms when micturition. The most common clinical manifestation of bladder stones is macroscopic hematuria, may be accompanied with other symptoms including the complaints of intermittence, frequency, urgency, dysuria, weak urine emission, incontinence, and lower abdominal pain.³

Obstruction of urinary outflow from the bladder is the most common triggering factor that may cause bone formation in the bladder. Obstruction is commonly caused by *Benign Prostatic Hyperplasia* (BPH), stricture of urethra, *bladder neck contracture*, and bladder diverticles. Several other comorbid factors that may cause bone formation in the bladder are intravesical corpus alienum, *neurogenic bladder*, migration of renal stones, and urinary tract infection.³ The purpose of this study is to know the characteristics of bladder stones in adult patients at H. Adam Malik General Hospital Medan from year 2013-2015.

Method

This study used a retrospective descriptive method conducted in the Department of Surgery Division Urology H. Adam Malik General Hospital Medan from January 1, 2013 to December 31, 2015. Data taken from medical records of inpatients and outpatients ≥ 18 years with a diagnosis of bladder stones. The total of samples obtained were 52 people. The independent variable taken were gender, age, occupation, last education, religion, region, clinical symptoms, amount of stones, size of stones, comorbid and type of treatment.

Result

Sample Characteristics

Table 1. Characteristics of Bladder Stone Patients based on Gender

Gender	Bladder stone patients (persons)	Percentage (%)
Male	44	84.6
Female	8	15.4
Total	52	100

Table 2. Characteristics of Bladder Stone Patients based on Age

Age	Bladder stone patients (persons)	Percentage (%)
21-25	5	9.6
26-30	1	1.9
31-35	3	5.8
36-40	6	11.5
41-45	6	11.5
46-50	7	13.5
51-55	7	13.5
56-60	6	11.5
61-65	8	15.4
66-70	1	1.9
71-75	2	3.8
Total	52	100

Table 3. Characteristics of Bladder Stone Patients based on Clinical Symptoms

Clinical Symptoms	Bladder stone patients (persons)	Percentage (%)
Dysuria	35	67.3
Freququcy	5	9.6
Hematuria	28	53.8
Incontinence	4	7.7
Intermittence	21	40.4
Nocturia	3	5.8

Lower abdominal pain	1	1.9
Waist pain	27	51.9
<i>Passing stone</i>	19	36.5
Urgency	2	3.8
None	2	3.8

Table 4. Characteristics of Bladder Stone Patients based on Comorbid

Comorbid	Bladder stone patients (persons)	Percentage (%)
BPH	18	34.6
Stricture Urethra	2	3.8
<i>Neurogenic Bladder</i>	2	3.8
Renal stones	16	30.8
UTI	11	21.1
Hypertension	6	11.5
DM	8	15.4
<i>Spinal cord Injury</i>	1	1.9
<i>Bladder neck Contacture</i>	1	1.9
Bladder tumors	1	1.9
Uric acid	4	7.7
Ureter stones	1	1.9
Bronchitis	1	1.9
Prostatic tumors	1	1.9
Cholelithiasis	1	1.9
Dyslipidemia	2	3.8
Chronic appendicitis	1	1.9
Hepatitis B	1	1.9
Hydronephrosis	5	9.6
<i>Parkinson's Disease</i>	1	1.9
Anemia	10	19.2
AKI	9	17.3
None	6	11.5

Discussion

In this research, based on Table 1 of adult bladder stone patients in H. Adam Malik General Hospital year 2013-2015 male gender was found more (84.6%) than female gender 15.4%. Table 2 shows that most bladder sufferers were in the age range of 61-65 years ie as many as 8 people (15.4%) with an average age range of 45-50 years. This is consistent with the previous research that more than 75% of bladder sufferers were caused by Bladder Outlet obstruction and generally in men over the age of 50 years.⁴ Another study by Yasui et al, 2008 that secondary bladder stones were commonly found in adult males aged more than 60 years

The largest occupation of adult bladder patients in H. Adam Malik General Hospital year 2013-2015 were self-employed as many as 24 people (46.1%). This is in accordance with the previous research by Ginting B. (2014) patients with urinary tract stones based on the highest employment was in the entrepreneurial group with a proportion of 31.8% (41 people).⁶ This is in contrast to research by Suparlan (2001) at RS Elisabeth Medan which stated the highest number of civil servants were 58 people (23.01%) followed by self-employed as many as 57 people (22.62%).⁷

According to Table 3, the most common clinical symptom in bladder patients were dysuria (35 persons (67.3%)), followed by the symptoms of hematuria were 28 people (53.8%), waist pain 27 people (51.9%), intermittence 21 people (40.4%), Passing stone 19 people (36.5%), frequency 5 people (9.6%), incontinence 4 people (7.7 %), Nocturia 3 (5.8%), urgency 2 people (3.8%), and lower abdominal pain 1 person (1.9%). This result is higher when compared with previous studies conducted by Torricelli et al., 2012 that the symptoms of Lower Urinary Tract Symptoms (LUTS) experienced by approximately 50% of patients with bladder stones but the most common symptom was haematuria and rarely found without complaints.³ This study also found 2 patients (3.8%) without complaints. It was found that the highest number of stones in the bladder stones were 1 stone in 46 people (88.5%), followed by more than 2 stones, 4 people (7.7%), and 2 stones (3.8%). From this research also found that the stone size in patients with bladder stones were most ≤ 25 mm that was as much as 32 people (61.5%), while with the stone size > 25 mm, there were 20 people (38.5%). This percentage was lower than the previous research conducted by Douenias et al., 1991. In a study of 100 bladder patients, about 80% of patients had a stone size < 2 cm.

Based on Table 4 it was found that most comorbid in bladder stone patients were BPH as many as 18 people (34.6%). This is consistent with the previous research by Papatsoris et al 2006, that BPH is the most common cause of Bladder outlet obstruction where more than 75% caused bladder stones.⁴ The second most common comorbid was kidney stones in 16 people (30.8%). This was, as mentioned in the study of Benway et al, 2016 that bladder stones can develop de novo in the bladder or maturation of the migrating nid from the upper urinary tract that was spontaneously missed and most commonly from the kidneys. The percentage of kidney stones that migrated to the bladder was not known for certain, so it still needs further research to prove their relationship. In addition to BPH and the most common comorbid kidney stones were 11 individuals (21.1%).³ This is consistent with a previous study by Torricelli et al 2012 that UTI may be associated with bladder stones of 22-34% of cases.⁴ According to another study by Yilmaz et al. (2012) who examined urinary tract stasis with urinary tract infection in Turkey with 177 samples found 27 samples of urinary tract stones with UTI as evidenced by positive urine culture.

The most type of treatment in patients with bladder stones was lithotripsy of as many as 27 people (51.9%), while vesicolithotomy as many as 20 people (38.5%). In this study there were also patients who did not have any treatment that were 5 people (9.6%) in which 4 people rejected the surgery and 1 person chose surgery in the outer hospital. In H. Adam Malik General Hospital Medan surgery for bladder stone is generally done in 2 ways namely lithotripsy and vesicolithotomy. Lithotripsy is the most common action for a stone size of ≤ 25 mm, this is because the usual mechanical stone shredder used can only destroy stones of a maximum size of 25 mm. In addition to mechanical lithotripsy other tools commonly used is a pneumatic type of lithotripsy more effective for stone size ≤ 25 mm because when used to destroy stones > 25 mm would require a longer surgical time. For stones sized > 25 mm in H. Adam Malik General Hospital the choice of therapy was vesicolithotomy. Vesicolithotomy was previously considered as the gold standard for the treatment of bladder stones. However according to Damirel et al, 2006 recently vesicolithotomy began to be leaved because of newer techniques minimally invasive. In addition, vesicolithotomy may cause stress in patients, due to the long use of catheter, long hospitalization duration, and leaving incision scar.⁸

Conclusion

Characteristics of bladder stone in adult patient at H. Adam Malik General Hospital Medan year 2013-2015 which is mostly by male gender 84.6%, age range 61-65 years old 15.4%, type of job entrepreneur 46.1%, last education High school 59.6%, Islamic religion 55.8%, area of Medan city 28.8%, clinical dysuria 67.3%, number of stones 1 for 88.5%, stone size ≤ 25 mm 61.5%, comorbid BPH 34.6%, and type of lithotripsy action 51.9%.

References

1. Brikowski TH, Yair L, Margaret SP. 2007. Climate-Related Increase in the Prevalence of Urolithiasis in the United States. Texas, Dallas.
2. Aggarwal KP, Shifa N, Monica K, Chanderdeep T. 2013. Nephrolithiasis: Molecular Mechanism of Renal Stone Formation and the Critical Role Played by Modulators. Utrakhand, India.
3. Benway B, Bhayani S, 2016. Urology Eleventh Edition. Campbell-Walsh. Elsevier, p1291-1296.

4. Torricelli F, Mazzucchi E, Danilovic A, et al. Surgical Management of Bladder Stones. *Bras. Cir.* 2012; 40(3): 227-233
5. Yasui T, Iguchi M, Suzuki S, et al. Prevalence and epidemiologic characteristics of lower urinary tract stones in Japan. *Urology* 2008;72:1000–5.
6. Ginting, Yehezkiel Bastanta. Karakteristik pasien penderita batu saluran kemih di Rumah Sakit Umum Pusat Haji Adam Malik Medan tahun 2011-2014. *KK USU. Medan*: 2014.
7. Suparlan, Lingga. Karakteristik penderita batu saluran kemih yang dirawat inap di Rumah Sakit Umum Santa Elisabeth Medan tahun 1999-2000. *FKM USU. Medan*: 2001.
8. Demirel F, Çakan M, Yalçinkaya F, et al. Percutaneous suprapubic cystolithotripsy approach: for whom? Why? *J Endourol* 2006;20:429–31.
